



INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior
National Park Service

All or some of the information you provide may become available to the public.

OMB # (1024-0236)
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Reporting Year: 2006	Park: Shenandoah NP	Select the type of permit this report addresses: Scientific Study									
Name of principal investigator or responsible official: Mark Engle		Office Phone: (703)648-6454									
Mailing address: U.S. Geological Survey 956 National Center Reston, VA 20192 US		Office FAX Office Email engle@usgs.gov									
Additional investigators or key field assistants (first name, last name, office phone, office email) <table><tr><td>Name: David P. Krabbenhoft</td><td>Phone: (608)821-3843</td><td colspan="2">Email: dpkrabbe@usgs.gov</td></tr><tr><td>Name: Allan Kolker</td><td>Phone: (703)648-6418</td><td colspan="2">Email: akolker@usgs.gov</td></tr></table>				Name: David P. Krabbenhoft	Phone: (608)821-3843	Email: dpkrabbe@usgs.gov		Name: Allan Kolker	Phone: (703)648-6418	Email: akolker@usgs.gov	
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Name: Allan Kolker	Phone: (703)648-6418	Email: akolker@usgs.gov									
Project Title (maximum 300 characters): Atmospheric mercury speciation and source apportionment at Shenandoah National Park											
Park-assigned Study or Activity #: SHEN-00324	Park-assigned Permit #: SHEN-2006-SCI-0008	Permit Start Date: May 15, 2006	Permit Expiration Date: Sep 15, 2006								
Scientific Study Starting Date: Jul 19, 2006		Estimated Scientific Study Ending Date: Sep 06, 2006									
For either a Scientific Study or a Science Education Activity, the status is: Continuing		For a Scientific Study that is completed, please check each of the following that applies: <input type="checkbox"/> A final report has been provided to the park or will be provided to the park within the next two years <input type="checkbox"/> Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park <input type="checkbox"/> All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed									
Activity Type: Research											
Subject/Discipline: Air Quality											

Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

The influence of mercury (Hg) from industrial sources on receptors is not well known. To better determine sources of Hg and other trace elements at Shenandoah National Park we propose to measure concentrations of atmospheric Hg species and collect samples of total suspended particulates for Hg and other trace element analyses. Combining results from our research with those already collected at the Big Meadows air quality station and mass air trajectory modeling we plan to perform atmospheric Hg source apportionment modeling. This data will be helpful in understanding potential sources of trace element atmospheric deposition to the park.

Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):

An atmospheric mercury speciation unit was installed and operated at the Big Meadow air quality site in Shenandoah National Park from June 19, 2006 to September 6, 2006. The unit had some analytical and power issues but this was drastically minimized by the fantastic help from Liz Garcia with the NPS. Preliminary results suggest that concentrations of elemental mercury, fine particulate mercury, and reactive gaseous mercury were typical of rural environments. However a few periods of elevated reactive gaseous mercury were observed; this will be further investigated by comparing with modeling results and NPS air quality data.

Twelve-hour integrated daytime and nighttime fine and total suspended particulate samples for mercury and other trace metals were collected from Big Meadows and a site near the Pinnacles research station from August 21st-30th. These samples have been submitted to laboratories for analysis. This data will be useful in identifying mode and source of particulate Hg at the site.

For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?

No

Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):
\$0

Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):
\$10000

List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:

Paperwork Reduction Act Statement: A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.